



Workshop on the
Staff Draft
2006 Summer Outlook Report

December 8, 2005
Hearing Room B



2006 Summer Outlook Staff Workshop

- Introduction/Overview
- Participating in today's workshop
- Today's Agenda
- Written Comments
- Next Steps



Outlook Development Process

- Changes to accounting methodology as a result of comments from March 21, 2005 workshop
- Preliminary outlook presented at the September 12th EAP meeting
- Energy Commission staff consulted with ISO and CPUC staff on load and resource assumptions



Today's Agenda

- Summary of changes made as a result of stakeholder comments
- Results of assessment for Statewide, ISO control area, and NP26 and SP26 sub-regions
- First look at ongoing probability analysis
- Solicit comments from Utilities and other stakeholders on methodology and assumptions



To participate in Today's workshop

Teleconference call in number

(888) 323-2711

Passcode: 27630

Call leader: David Ashuckian

Written Comments should be submitted by
December 23, 2005 to: **Docket # 05-SDO-2**



Next Steps

- Draft Outlook and preliminary results from this workshop will be presented to the Joint Energy Action Plan on Monday, December 12th at the CPUC
- Final staff Outlook report will be published in early spring
- Ongoing analysis and data collection on cumulative probability of outages



Summer 2006 Electricity Supply and Demand Outlook

December 8, 2005 Workshop

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Overview

- Changes in Methodology Since 2005
- Caveats
- Summer 2006 Statewide, CA ISO, NP26 and SP26 Tables
- Resource Assumptions



Methodology Changes

- Divided table into a planning convention and two operating conditions
- Removed high risk retirements from calculations
- Include demand response and interruptible load
- Removed MID, Redding, Roseville, TID and WAPA from CA ISO and NP26
- Include Probability Assessment for SP26



Caveats

- Tables represent physical system capabilities
 - Do not evaluate market conditions or deliverability of economic contracts
- Tables should not be used in determining resource adequacy of individual utilities within a specified region
- Factors not included in this assessment can have major effects on the system



2006 Detailed Monthly Electricity Outlook California Statewide

Resource Adequacy Planning Conventions	June	July	August	September
1 Existing Generation ¹	56,364	57,377	57,377	57,377
2 Retirements (Known)	-1,539	0	0	0
3 High Probability CA Additions	2,552	0	0	0
4 Net Interchange ²	13,118	13,118	13,118	13,118
5 Total Net Generation (MW)	70,495	70,495	70,495	70,495
6 1-in-2 Summer Temperature Demand (Average) ³	55,119	57,626	58,228	57,318
7 Demand Response (DR)	691	691	691	691
8 Interruptible/Curtailable Programs	1,349	1,349	1,349	1,349
9 Planning Reserve ⁴	31.6%	25.9%	24.6%	26.5%
Expected Operating Conditions				
10 Outages (Average forced + planned)	-2,570	-2,570	-2,570	-2,570
11 Zonal Transmission Limitation ⁵	-150	-150	-150	-150
12 Expected Operating Generation with Outages/Limitations ⁶	67,775	67,775	67,775	67,775
13 Expected Operating Reserve Margin (1-in-2) ⁷	29.4%	22.3%	20.7%	23.1%
Adverse Conditions				
14 High Zonal Transmission Limitation	-250	-250	-250	-250
15 High Forced Outages (1 STD above average)	-1,160	-1,160	-1,160	-1,160
16 Adverse Temperature Impact (1-in-10)	-3,331	-3,502	-3,627	-3,524
17 Adverse Scenario Reserve Margin ⁷	17.1%	10.7%	9.1%	11.3%
18 Adverse Scenario Reserve Margin w/DR and Interruptibles ⁸	21.5%	14.8%	13.2%	15.5%
19 Resources needed to meet 7.0% Reserve (W/DR & Interruptibles)	0	0	0	0
20 Surplus Resources Above 7.0% Reserve (W/DR & Interruptibles)	6,712	3,846	3,068	4,152
21 Existing Generation Without Capacity Contracts ⁹	-3,722	-3,722	-3,722	-3,722



2006 Detailed Monthly Electricity Outlook

CA ISO Control Area

Resource Adequacy Planning Conventions		<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1	Existing Generation ¹	45,894	46,102	46,102	46,102
2	Retirements (Known)	-1,539	0	0	0
3	High Probability CA Additions	1,747	0	0	0
4	Net Interchange ²	10,650	10,650	10,650	10,650
5	Total Net Generation (MW)	56,752	56,752	56,752	56,752
6	1-in-2 Summer Temperature Demand (Average) ³	44,245	46,147	46,287	45,865
7	Demand Response (DR)	691	691	691	691
8	Interruptible/Curtailable Programs	1,149	1,149	1,149	1,149
9	Planning Reserve ⁴	32.4%	27.0%	26.6%	27.7%
Expected Operating Conditions					
10	Outages (Average forced + planned)	-2,170	-2,170	-2,170	-2,170
11	Zonal Transmission Limitation ⁵	-150	-150	-150	-150
12	Expected Operating Generation with Outages/Limitations ⁶	54,432	54,432	54,432	54,432
13	Expected Operating Reserve Margin (1-in-2) ⁷	29.4%	22.7%	22.2%	23.7%
Adverse Conditions					
14	High Zonal Transmission Limitation	-250	-250	-250	-250
15	High Forced Outages (1 STD above average)	-1,060	-1,060	-1,060	-1,060
16	Adverse Temperature Impact (1-in-10)	-2,560	-2,689	-2,712	-2,713
17	Adverse Scenario Reserve Margin ⁷	17.0%	10.9%	10.5%	11.7%
18	Adverse Scenario Reserve Margin w/DR and Interruptibles ⁸	22.0%	15.6%	15.2%	16.4%
19	Resources needed to meet 7.0% Reserve (W/DR & Interruptibles)	0	0	0	0
20	Surplus Resources Above 7.0% Reserve (W/DR & Interruptibles)	5,556	3,383	3,209	3,659
21	Existing Generation Without Capacity Contracts ⁹	-3,722	-3,722	-3,722	-3,722



2006 Detailed Monthly Electricity Outlook

CA ISO Northern Region (NP26)

Resource Adequacy Planning Conventions		June	July	August	September
1	Existing Generation	24,573	24,394	24,394	24,394
2	Retirements (Known)	-219	0	0	0
3	High Probability CA Additions	40	0	0	0
4	Net Interchange ¹	550	550	550	550
5	Total Net Generation (MW)	24,944	24,944	24,944	24,944
6	1-in-2 Summer Temperature Demand (Average) ²	19,964	20,395	20,121	19,384
7	Demand Response (DR)	245	245	245	245
8	Interruptible/Curtailable Programs	260	260	260	260
9	Planning Reserve ³	27.5%	24.8%	26.5%	31.3%
Expected Operating Conditions					
10	Outages (Average forced + planned)	-1,100	-1,100	-1,100	-1,100
11	Zonal Transmission Limitation ⁴	0	0	0	0
12	Expected Operating Generation with Outages/Limitations ⁵	23,844	23,844	23,844	23,844
13	Expected Operating Reserve Margin (1-in-2) ⁶	20.0%	17.4%	19.0%	23.7%
Adverse Conditions					
14	High Zonal Transmission Limitation	0	0	0	0
15	High Forced Outages (1 STD above average)	-500	-500	-500	-500
16	Adverse Temperature Impact (1-in-10)	-654	-668	-660	-635
17	Adverse Scenario Reserve Margin ⁶	13.6%	11.1%	12.7%	17.1%
18	Adverse Scenario Reserve Margin w/DR and Interruptibles ⁷	16.1%	13.6%	15.2%	19.7%
19	Resources needed to meet 7.0% Reserve (W/DR & Interruptibles)	0	0	0	0
20	Surplus Resources Above 7.0% Reserve (W/DR & Interruptibles)	1,826	1,350	1,652	2,467
21	Existing Generation Without Capacity Contracts ⁸	-682	-682	-682	-682



2006 Detailed Monthly Electricity Outlook

CA ISO Southern Region (SP26)

Resource Adequacy Planning Conventions		June	July	August	September
1	Existing Generation ¹	21,321	21,708	21,708	21,708
2	Retirements (Known)	-1,320	0	0	0
3	High Probability CA Additions	1,707	0	0	0
4	Net Interchange ²	10,100	10,100	10,100	10,100
5	Total Net Generation (MW)	31,808	31,808	31,808	31,808
6	1-in-2 Summer Temperature Demand (Average) ³	24,806	26,300	26,717	27,027
7	Demand Response (DR)	395	395	395	395
8	Interruptible/Curtailable Programs	950	950	950	950
9	Planning Reserve ⁴	33.6%	26.1%	24.1%	22.7%
Expected Operating Conditions					
10	Outages (Average forced + planned)	-1,070	-1,070	-1,070	-1,070
11	Zonal Transmission Limitation ⁵	-150	-150	-150	-150
12	Expected Operating Generation with Outages/Limitations ⁶	30,588	30,588	30,588	30,588
13	Expected Operating Reserve Margin (1-in-2) ⁷	30.9%	21.2%	18.8%	17.0%
Adverse Conditions					
14	High Zonal Transmission Limitation	-250	-250	-250	-250
15	High Forced Outages	-560	-560	-560	-560
16	Adverse Temperature Impact (1-in-10)	-1,937	-2,054	-2,086	-2,110
17	Adverse Scenario Reserve Margin ⁷	14.7%	6.4%	4.3%	2.8%
18	Adverse Scenario Reserve Margin w/DR and Interruptibles ⁸	21.2%	12.4%	10.2%	8.6%
19	Resources needed to meet 7.0% Reserve (W/DR & Interruptibles)	0	0	0	0
20	Surplus Resources Above 7.0% Reserve (W/DR & Interruptibles)	2,935	1,211	731	373
21	Existing Generation Without Capacity Contracts ⁹	-3,040	-3,040	-3,040	-3,040



Additions and Retirements

CA ISO Control Area					
SP26			NP26		
Additions			Additions		
Name	MW	Expected	Name	MW	Expected
Malburg	129	Jan-06	San Francisco Peaker	40	Jun-06
Riverside ERC	86	Feb-06		<u>40</u>	
Mountainview	1012	Feb-06			
Palomar Escondido	480	Jun-06			
	<u>1707</u>				
Retirements (Known)			Retirements (Known)		
Mohave	-1320		Hunters Point 1/4	-219	
	<u>-1320</u>			<u>-219</u>	
Non-CA ISO Control Areas					
LADWP & IID Control Areas			SMUD & TID Control Area		
Additions			Additions		
Name	MW	Expected	Name	MW	Expected
			Ripon	86	Jan-06
			Walnut Energy Center	240	Apr-06
			Cosumnes	480	Apr-06
				<u>806</u>	



Net Interchange

NP26 Net Interchange	
Path 26	(3,000)
Net NW Imports	4,000
Net MID/TID Exports	(450)
Total	550
SP26 Net Interchange	
Path 26	3,000
Net of DC Line	2,000
Net SW Imports	4,100
Net LADWP Control Area Imports	1,000
Total	10,100

- Based on CA ISO metered data.
- Nets out exports
- SP26 includes increases of SW Imports 400 MW
- LADWP imports include CA ISO municipal portion of Intermountain Power



Existing Generation w/o Capacity Contracts as of 2004

Existing Generation without Capacity Contracts					
SP26			NP26		
Name	MW	Retirement	Name	MW	Retirement
		Date			Date
Coolwater 1/2	-146	2006	Pittsburg 7	-680	2006
Mandalay 1/2	-433	2006		<u>-680</u>	
Ormond Beach 1/2	-1491	2006		<u><u>-680</u></u>	
Encina 4	-300	2006			
El Segundo 3/4	-670	2006			
	<u><u>-3040</u></u>				



Probabilistic Analysis of the Adequacy of Power Supply in SP26

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Prepared for the Workshop
December 8, 2005



Adequacy of Power Supply

Deterministic Approach

- Assesses the adequacy of power supply at some average conditions (1-in-2). (Sometimes, it is added by 1-in-10 case)
- Necessary, as it assesses adequacy in the most probable case
- Not sufficient, as multiple of other cases are possible which are not covered



Adequacy of Power Supply

Probabilistic Approach

- In fact, some, if not all, factors are not deterministic
 - Weather conditions
 - Temperature
 - Rainfall
 - Availability of resources
 - Forced outages (plants and lines)
 - Additions, Retirements
- In contrast to deterministic case, there are two patterns under uncertainty :
 - With some combination of parameters, supply meets demand
 - With other combination, it does not



Risk of Inadequate Supply

- The probability of inadequate supply is called Risk
- Risk of non-compliance with operational requirements are assessed in this study
- Operational requirements are expressed in Reserve Margins



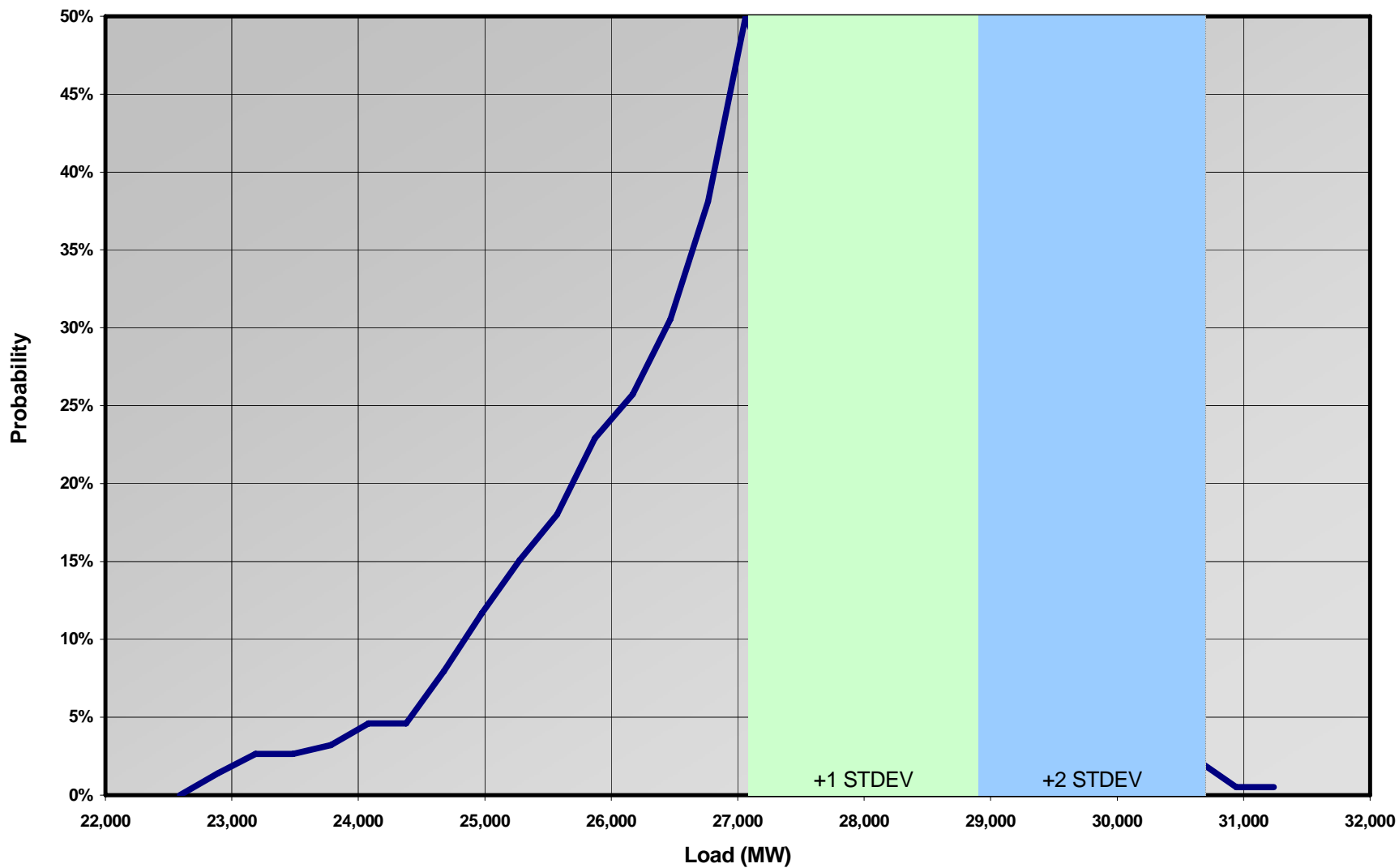
Addressing Inadequacy:

CA ISO Procedures

- Stage 1: Control Area has 7% or less reserves
Response: CA ISO alerts news media that conservation in all sectors is requested
- Stage 2 Control Area has 5% or less reserves
Response: CA ISO tells utilities to begin curtailing interruptible customers
- Stage 3 Control Area has 1.5% or less reserves
Response: CA ISO tells utilities to begin shedding firm load on a predetermined schedule/plan
- Shortage of Supply
Response: All relevant parties combine efforts to minimize losses and restore power

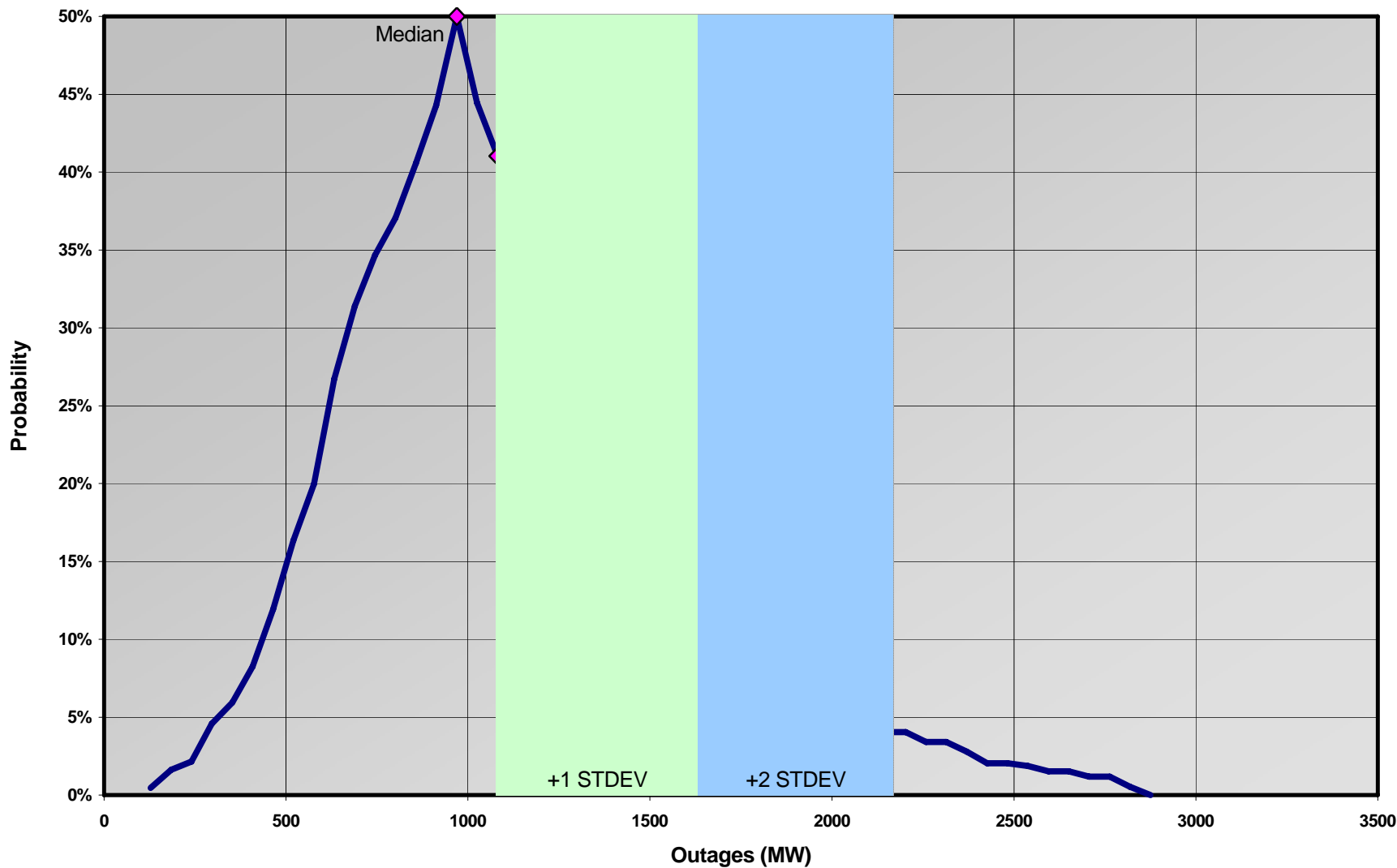


Probability of Load CA ISO Southern Region (SP26) Summer 2006



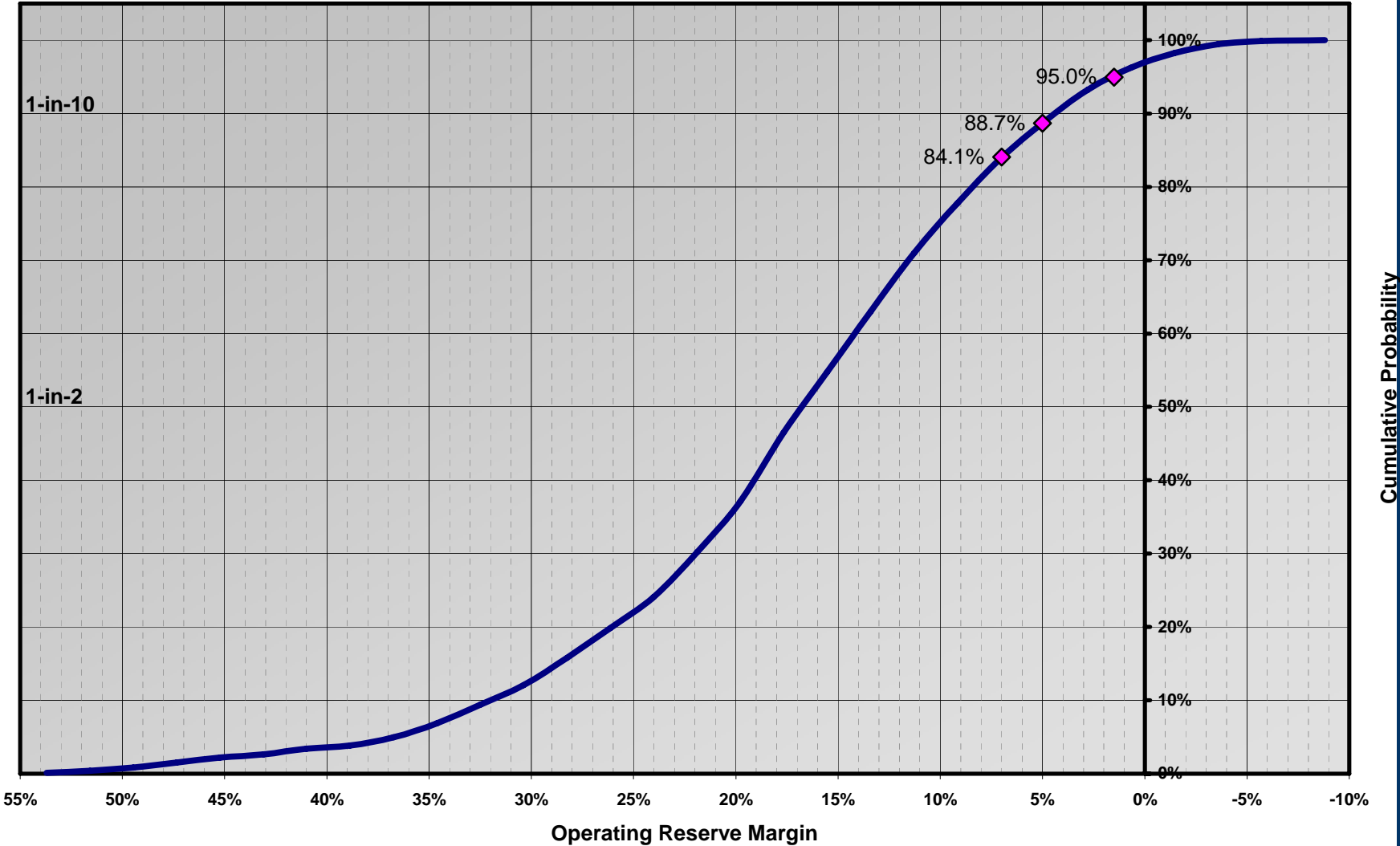


Probability of Forced Outages CA ISO Southern Region (SP26) Summer 2006





Operating Reserves (not including DR & Interruptibles)
CA ISO Southern Region (SP26) Summer 2006





Operating Reserve (including DR & Interruptibles) CA ISO Southern Region (SP26) Summer 2006

